

ZOOLOGY.—*North American genera of the family Orbiniidae (Annelida: Polychaeta), with descriptions of new species.*¹ MARIAN H. PETTIBONE, University of New Hampshire. (Communicated by Fenner A. Chace, Jr.)

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The study of several series of specimens belonging to the Orbiniidae has indicated the need to modify the definitions of some of the genera of this family. Since the monographic work of Eisig (1914) on the systematics and morphology of the Ariciidae (= Orbiniidae), the family name and general systematics used in that revision have been followed by most workers. Some genera have been added to the family, however. The following revision includes those genera that were represented by material available for study in the United States National Museum. Three new species of orbiniids are described from the east coast of North America and one from the west coast. A new subgenus is proposed and new names are given for two species. The types are deposited in the United States National Museum.

FAMILY ORBINIIDAE

Type genus: *Orbinia* Quatrefages, 1866 = *Aricia* Savigny, 1822, preoccupied.

Prostomium oval, truncate or conical, without appendages. First 1 or 2 segments achaetous, without appendages (these segments may be biannulate, thus buccal segment may appear 1- to 4-ringed). Parapodia biramous, supported by acicula. Body divided into two regions. Anterior thoracic region bearing dorsolateral notopodia with crenulate capillary notosetae; more or less developed postsetal notopodial lobes (dorsal cirri of Eisig); lateral neuropodia with crenulate capillary setae, crotchets, pseudocrotchets, transitional setae (subuluncini), or spines; and more or less developed postsetal lobes with or without podal papillae. Abdominal region with parapodia shifted dorsally, noto- and neuropodial lobes elongate, ligulate, both noto- and neurosetae crenulate capillaries; notopodia sometimes with additional shorter forked setae with inner part of fork somewhat frayed (perhaps these are broken

crenulate capillaries; at least they do not appear to be as regular in structure as in the polychaete families where true forked setae are found). Paired simple (rarely branched) ligulate ciliated branchiae dorsal to notopodia on all segments of body except some anterior ones. Anal cirri 2 or 4. Proboscis an eversible, unarmed, soft sac, slightly lobulate or voluminous, branched. Burrow in sand or mud. Bottom-deposit feeders.

Genus *Orbinia* Quatrefages, 1866

Aricia Savigny, 1822, preocc.; type (by monotypy): *A. sertulata* Savigny, 1822.

Orbinia Quatrefages, 1866; type (by original designation): *O. sertulata* (Savigny) = *Aricia cuvierii* Audouin and Edwards, 1833.

Diagnosis.—Prostomium conical. Achaetous buccal segment 1-ringed. Postsetal neuropodial lobes of thoracic segments fimbriated—with vertical row of 4-7 or more papillae; sometimes papillae continued subpodally on some segments.

Remarks.—In the original description by Savigny of *Aricia sertulata* from La Rochelle, France, the anterior end was described as having two pairs of very small antennae on the sides of the small conical prostomium and eyes slightly distinct. When in 1833 Audouin and Edwards added two more species of *Aricia*, *A. cuvierii* and *A. latreillii*, and established the family Ariciidae, the prostomium was described as being without antennae and without eyes. As more species have been found and added to the family, none with prostomial antennae have been described. It has generally been considered that the type specimen of Savigny must have been defective. In 1866 Quatrefages proposed the generic name *Orbinia* for Savigny's species which he credited with having 5 antennae (4 antennae in Savigny's description); he used *Aricia* in the sense of Audouin and Edwards for species without antennae, as *A. cuvierii* and *A. latreillii*. According to the present rules of nomenclature, he should have done the opposite. Subsequent workers have used *Aricia* in the sense of Audouin and Edwards. Except for the differences in the prostomium, there is remarkable agreement in the descriptions of *A. sertulata* and *A. cuvierii*; both came origi-

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nally from the western coast of France. Eisig, in his monograph, referred *A. sertulata* questionably to *A. cுவierii*. Since there is no way of examining Savigny's type, it seems best to assume that the type specimen was defective anteriorly, to maintain *sertulata* as the type of both *Aricia* and *Orbinia* and to synonymize *A. cுவierii* with it. The other choice would be to assign *Aricia* and *Orbinia* to the list of indeterminate genera and give a new name to the genus containing *cுவierii* and similar species. Since the description of *sertulata* is adequate in other respects, it would seem best to retain it.

Subgenus *Orbinia*

Diagnosis.—Without spikelike or lanceolate spines on any posterior thoracic neuropodia.

Subgenus *Phylo* Kinberg, 1866

Type (by monotypy): *P. felix* Kinberg, 1866; see Hartman, 1949, p. 251.

Diagnosis.—With large spikelike or lanceolate spines on some posterior thoracic neuropodia.

Genus *Scoloplos* Blainville, 1828

Type (by monotypy): *Scoloplos armiger* (O. F. Müller, 1776).

Diagnosis.—Prostomium conical. Achaetous buccal segment 1-ringed. Thoracic neuropodia with postsetal lobes not fimbriated, with 0-3 podal papillae; sometimes with subpodal or ventral papillae on some segments.

Subgenus *Scoloplos*

Labotas Kinberg, 1866; type (by monotypy): *L. novae-hollandiae* Kinberg, 1866.
Branchethus Chamberlin, 1919; type (by monotypy): *B. latum* Chamberlin, 1919.
Haploscoloplos Monro, 1933; type (by original designation): *Scoloplos cylindrifera* Ehlers, 1904.

Diagnosis.—Postsetal lobes of thoracic neuropodia with papilla in middle of lobe, with or without 1 or 2 additional papillae in lower part.

Remarks.—The typical subgenus, as here defined, includes species referred to *Haploscoloplos* Monro (1933, p. 261), which was established to include those species which differ from *Scoloplos* in having the thoracic neuropodia provided only with setae ending in capillary tips, without crotchets. In some cases this character is difficult to observe; the crotchets may be easily missed, occurring in some thoracic neuropodia and not in others. Until it can be established how much the abrasive action of certain substrata has to do

with the formation of certain types of crotchets from capillaries, the character does not seem to be a good one. *S. (S.) latus* (Chamberlin, 1919), the type species of *Branchethus* Chamberlin, 1919, p. 357, differs from most other species of *Scoloplos*, which usually have simple branchiae, by having the branchiae with up to 9 branches; this is of specific but not of generic significance. *Branchethus* was referred to *Scoloplos* by Fauvel (1932, p. 167). *Labotas* Kinberg was referred to *Scoloplos* by Augener (1922, p. 40).

Subgenus *Leodamus* Kinberg, 1866

Type (by monotypy): *L. verax* Kinberg, 1866; see Hartman, 1949, p. 104.

Diagnosis.—Thoracic neuropodia with postsetal lobes low, rounded, without papillae.

Remarks.—*S. (L.) johnsoni* (Moore, 1909, p. 260), which was described under *Aricia*, referred to *Scoloplos* by Eisig (1914, p. 403) and to *Orbinia* by Hartman (1944, p. 258), does not have the thoracic neuropodia fimbriated as in *Orbinia*, although it has subpodal ventral or stomach papillae more commonly found in species of *Orbinia*.

Genus *Naineris* Blainville, 1828

Naidonereis Malmgren, 1867.

Nainereis Mesnil and Caullery, 1898.

Type (by monotypy): *Naineris quadricuspida* (Fabricius, 1780).

Diagnosis.—Prostomium oval or truncate, loaf-shaped. Thoracic neuropodia with 0-3 postsetal papillae.

Remarks.—*Theodisca* Fr. Müller, 1858, has been referred to *Naineris* by Eisig (1914, p. 498); the description and figures of the type species, *T. aurantiaca* Fr. Müller, seem insufficient to determine just where among the orbiniids it belongs.

Subgenus *Naineris*

Diagnosis.—Thoracic neuropodia with single postsetal papilla in middle of lobe, with or without 1-2 additional papillae in lower part. Achaetous buccal segment 1- to 4-ringed.

Polynaineris, n. subgen.

Anthostoma Schmarda, 1861, preocc.; type: *A. ramosum* Schmarda, 1861 (see below), = *Naineris laevigata* (Grube).

Lacydes Kinberg, 1866, preocc.; type (by monotypy): *L. hawaiiensis* Kinberg, 1866, = *Naineris laevigata* (Grube).

Type: *Naineris laevigata* (Grube, 1855).

Diagnosis.—Thoracic neuropodia without postsetal papilla in middle of lobe, with postsetal lobe rounded or diagonally truncate, upper part sometimes elongate, papilla-like. Achaetous buccal segment 1-ringed.

Remarks.—*Anthostoma* Schmarda, 1861, preocc., included *A. hexaphyllum* from Cape of Good Hope and *A. ramosum* from Jamaica. I am selecting the latter species as the type. Both species have been referred to *Naineris laevigata* Grube, 1855; see Eisig, 1914, p. 450. The

subgenus *Polynaineris* includes most of the species that have been referred to *Naineris*.

***Orbinia (Orbinia) swani*, n. sp.**

Fig. 1, a-f

The species is based on a single specimen, incomplete posteriorly (U.S.N.M. no. 28296), collected at York Beach, Maine, by Emery Swan and Nathan Riser, July 12, 1953. It is named for Dr. Swan, one of the collectors.

Description.—Length 41 mm for 58 setigers, greatest width 2 mm. Body widest in thoracic

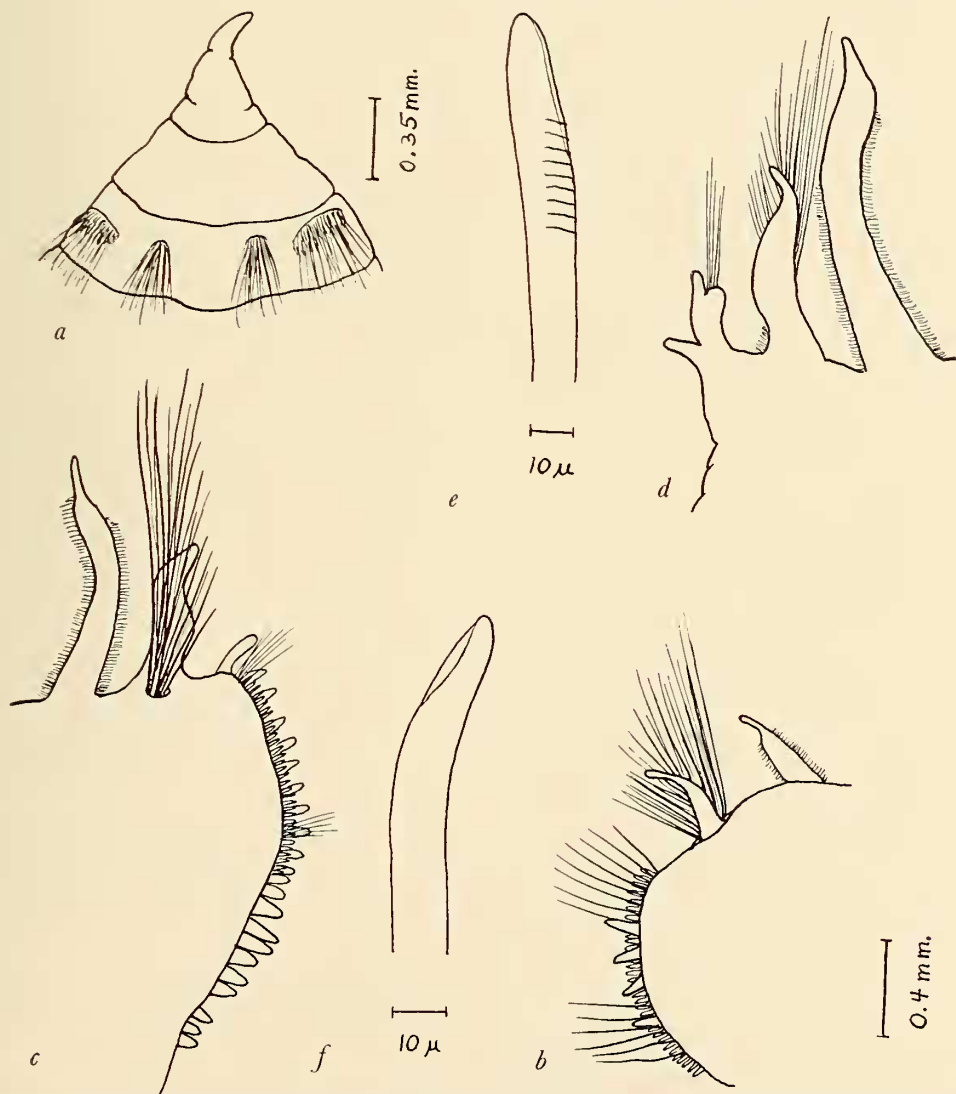


FIG. 1.—*Orbinia swani*, n. sp.: a, Dorsal view anterior end; b, left thoracic setiger 5, posterior view; c, left thoracic setiger 26, anterior view; d, left setiger 55 (abdominal 24), posterior view; e, thoracic neuropodial crotchet from setiger 5; f, same, from setiger 26. (All parapodia drawn to same scale.)

region, tapering abruptly anteriorly and gradually posteriorly. Thoracic region flattened dorsoventrally, abdominal region strongly convex ventrally, flattened dorsally. Large intersegmental middorsal glandular areas beginning between setigers 6 and 7. Prostomium (Fig. 1,a) acutely conical, somewhat wrinkled, longer than wide. Achaetous buccal segment obscurely biannulate, narrower and slightly longer than the following; large mouth with lateral lips formed by buccal segment; lower lip formed by ventral part of first and part of second setigers. Proboscis not extended. Branchiae beginning on setiger 5, short anteriorly, becoming elongate, ligulate, densely ciliated up to near the narrower distal tip; branchiae longer than parapodial lobes on abdominal region. Thoracic setigers 31. Thoracic notopodia dorsolateral (Fig. 1,b,c) with digitiform postsetal lobe and radiating bundle of crenulate capillary setae. Thoracic neuropodia lateral, forming an oval transverse cushion, with several transverse rows of crotchets (4 or 5 rows) and 2 groups of crenulate capillary setae, an upper and a lower group; crotchets (Fig. 1,e,f) golden-yellow, gently curved, smooth or with faint spinous rows, with tips bluntly rounded or conical; neuropodial postsetal lobes fimbriated, with 3-6 postsetal papillae in more anterior segments (none on first setiger), becoming more numerous in more posterior thoracic segments (up to 18 crowded papillae where best developed). Subpodal ventral papillae on setigers 19-40 (last 13 thoracic, first 9 abdominal), few at first (1 on setigers 19, 20), becoming more numerous and forming crowded ventral papillae in continuous line with 18 postsetal neuropodial papillae on setiger 28; ventral papillae decreasing markedly in number on abdominal setiger 4 (6 papillae), then decreasing to 2, then 1 and disappearing after ninth abdominal. Notopodia of abdominal region (Fig. 1,d) similar to those of thoracic region but notosetae more faintly crenulate, sometimes short and forked (broken crenulate capillaries?); without interramal cirri; with interramal ciliated lateral organ at base of notopodia. Abdominal neuropodia unequally bilobed, inner lobe shorter, rounded, outer lobe longer, digitiform, with small bundle of crenulate capillaries. Anterior abdominal segments (some 7 transitional ones) with subpodal lateral papillae corresponding in position to postsetal neuropodial papillae of the thoracic segments, decreasing in number from 7 papillae on first abdominal to single one on

eighth and remaining abdominal segments (at least to end of incomplete specimen).

Remarks.—*Orbinia swani* lacks special lanceolate spines in the posterior thoracic neuropodia and thus differs from the species belonging to the subgenus *Phylo*. It differs from *O. sertulata* (Savigny) and *O. latreillii* (Audouin and Edwards) in lacking interramal cirri on the abdominal segments and from *O. ornata* (Verrill) in having subpodal papillae or ventral cirri on the abdominal segments. *Orbinia swani* (thoracic setigers 31; subpodal ventral papillae on 22 segments) is close to and intermediate between *O. armandi* (McIntosh) from the Atlantic, off the Shetlands (thoracic setigers 19; long, villous subpodal ventral papillae on 6 segments) and *O. bioreti* (Fauvel) from Madagascar (thoracic setigers 34-39; subpodal ventral papillae on about 25 segments).

Scoloplos (Scoloplos) pugettensis, n. name
Scoloplos elongata Johnson, 1901, p. 412, pl. 10, figs. 105-110. Not *S. elongatus* Quatrefages, 1866.
Haploscoloplos elongata Hartman, 1948, p. 30.—Hartman and Reish, 1950, p. 26.—Berkeley and Berkeley, 1952, p. 97, fig. 200; 1956a, p. 242.

Diagnosis.—Length up to 195 mm, width up to 3 mm, segments up to 300. Thoracic setigers about 20 (19-22). Thoracic neuropodia with conical postsetal papilla and all neurosetae ending in capillary tips. Branchiae beginning on about setiger 16 (15-18). Abdominal segments without interramal cirri or subpodal papillae or ventral cirri but with entire, elongate, sometimes undulate subpodal flanges.

Remarks.—*S. pugettensis* differs from *S. acmeceps* Chamberlin by having all the thoracic neurosetae ending in capillary tips; in *S. acmeceps*, there are several rows of crotchets in addition to the capillaries.

Material examined.—Numerous specimens from Washington and Puget Sounds, Washington, low water to 12 fathoms, mud, gravelly-sand.

Distribution.—Arctic Alaska to California. Low water to 30 fathoms.

Scoloplos (Scoloplos) dayi, n. name
Orbinia dubia Day, 1955, p. 409, fig. 1, a-d. Not *Scoloplos dubia* Tebble, 1955.

Remarks.—*Orbinia dubia* Day, 1955 (issued in October) has thoracic neuropodia with only 1-3 podal papillae, thus not fimbriated as in *Orbinia*, although there are stomach papillae as in many

species of *Orbinia*. According to the revision proposed herein, the species should be referred to *Scoloplos*. Unfortunately *Scoloplos dubia* is preoccupied by Tebble (1955, p. 123, issued in August). I have therefore given the name *Scoloplos dayi* to Day's species from South Africa.

***Scoloplos (Scoloplos) riseri*, n. sp.**

Fig. 2, a-d

The species is known from a single specimen, incomplete posteriorly, collected in the Woods Hole region, Massachusetts, August 8, 1950, exact locality unknown (U.S.N.M. no. 28295). It is named for Dr. Nathan Riser.

Description.—Length 25 mm for 100 segments, greatest width 1.5 mm. Body sublinear, tapering rather abruptly anteriorly and gradually posteriorly. Thoracic region flattened dorsoventrally, abdominal region strongly convex ventrally, flattened dorsally. Prostomium (Fig. 2,a) acutely conical, longer than wide, sometimes wrinkled,

appearing 2- to 3-ringed, with pair of minute deep-set eyespots laterally near base of prostomium. Achaetous buccal segment narrower and about same length as the following; buccal segment and part of first setiger involved in mouth. Proboscis not extended. Branchiae beginning on setiger 10, short at first, becoming long, ligulate, densely ciliated up to near distal tip. Thoracic setigers 19. Thoracic notopodia (Fig. 2,b) with digitiform postsetal lobe and radiating bundle of crenulate capillaries. Thoracic neuropodia forming an oval cushion-like lobe with several transverse rows of shorter crotchets and posterior row of longer crenulate capillaries; crotchets (Fig. 2,d) straight or slightly curved, with tips blunt to conical, appearing hooded at certain angles, with transverse spinous rows. Short, rounded postsetal neuropodial lobe with single conical papilla on first 11 setigers, 2 or 3 postsetal papillae on rest of thoracic setigers. Abdominal setigers (Fig. 2,c) with notopodial postsetal lobe longer than in

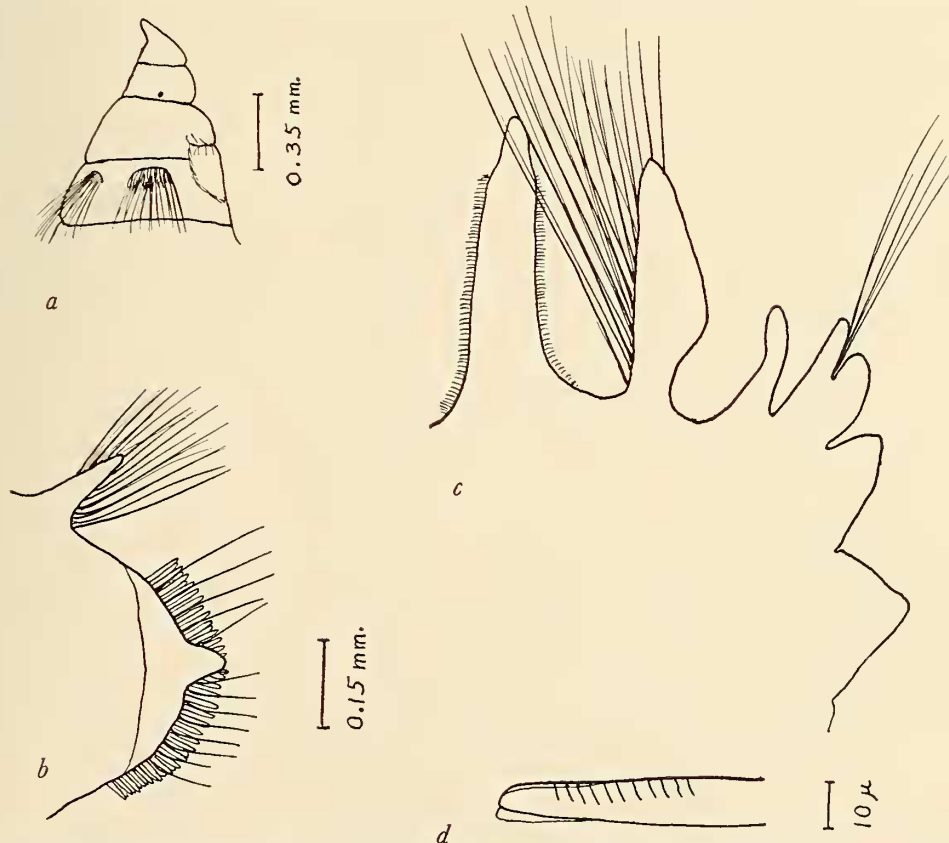


FIG. 2.—*Scoloplos riseri*, n. sp.: a, Lateral view anterior end; b, right thoracic parapodium from setiger 6, posterior view; c, right parapodium from setiger 30 (tenth abdominal), posterior view; d, thoracic neuropodial crotchets. (Both parapodia drawn to same scale.)

those of thoracic region, ligulate, with bundle of faintly crenulate capillaries and some shorter forked notosetae (broken crenulate capillaries?). Neuropodia with two subequal, short, digitiform lobes and small bundle of faintly crenulate capillaries. An interramal cirrus on last 2 thoracic setigers and continuing on about 70 abdominal segments. Subpodal papillae on setigers 14-24 (last 6 thoracic, first 5 abdominal): setigers 14-16 with single lateral papilla; setiger 17 with 2 lateral and 2 ventral papillae on each side; setiger 18 with 2 lateral and 4 ventral papillae; setigers 19-21 with 7-9 papillae forming continuous row nearly reaching midventral line; setigers 22-24 with 3 subpodal lateral papillae; 2 wide conical subpodal papillae on rest of abdominal segments (Fig. 2,c), corresponding in position to entire subpodal flange found in some species of *Scoloplos*.

Remarks.—*S. riseri* differs from most of the other species of *Scoloplos* by having subpodal ventral papillae on some anterior segments; these are found more commonly in species of *Orbinia*. However the postsetal neuropodial lobes are not fimbriated as in *Orbinia*, there being only 1-3 postsetal papillae. Also the anterior abdominal segments are provided with interramal cirri. *S. riseri* is close to *S. dayi* from South Africa. The two species differ in the following:

	<i>Scoloplos dayi</i>	<i>Scoloplos riseri</i>
Subpodal ventral papillae	Present on setigers 15-32, up to 20 in a row on each side.	Present on setigers 14-24, up to 9 in a row on each side.
Abdominal sub-podal region	Entire subpodal flange after setiger 32.	Two subpodal papillae or slashed subpodal flange after setiger 24.

***Scoloplos (Scoloplos) schmitti*, n. sp.**

Fig. 3, a-h

The species is represented by 21 specimens, incomplete posteriorly, taken from four *Albatross* stations from the deep Atlantic off the east coast of North America in 1883-1885. The types (U.S. N.M. nos. 28298 and 3178) were taken from 37° 12' N., 74° 20' W., 788 fms., blue mud, *Albatross* Station 2018, 1883. The species is named for Dr. Waldo Schmitt of the United States National Museum, whose encouragement and help have aided so many zoologists.

Description.—Length 20 mm for 50 setigers (none complete), greatest width 2 mm. Body widest in thoracic region, tapering rather abruptly

anteriorly and gradually posteriorly. Thoracic region flattened dorsoventrally; abdominal region convex ventrally, flattened dorsally. Prostomium (Fig. 3,a) subtriangular, bluntly conical, about as wide as long. Achaetous buccal segment slightly longer than the following; buccal segment and first setigerous segment involved in mouth (Fig. 3,b). Proboscis only partially extended, appearing as a lobulated sac. Branchiae beginning on setiger 9 (8-10), flattened, triangular, tapering to slender tips, becoming longer in more posterior segments. Thoracic setigers 13-14. First three setigers (Fig. 3,b,c) differ markedly from rest of thoracic setigers; notopodia with small conical postsetal lobe and radiating bundle of long crenulate capillary setae; neuropodia forming oval cushion-like lobe, without postsetal papillae, with 3 kinds of setae: (1) 2 rows of smooth, stout, reddish amber-colored spines with tips straight or curved, pointed and hooded, the hood frayed in various ways (Fig. 3,f,g); (2) anterior row of short crotchets (not as stout as the spines), with tips blunt, frayed hood, and transverse spinous rows (Fig. 3,h); (3) a small group of crenulate capillaries at upper part of neuropodial bundle. Rest of thoracic setigers (Fig. 3,b,d) with digitiform postsetal notopodial lobe; neuropodia with conical postsetal lobe, with several rows of crenulate capillary neurosetae (sometimes a few short hooded crotchets on setiger 4). Abdominal segments (Fig. 3,e) with bilobed neuropodium; inner lobe short, rounded; outer lobe longer, digitiform, with small bundle of long, faintly crenulate capillaries. A low entire subpodal lobe. No ventral cirri, subpodal papillae or interramal cirri. Large middorsal brownish glandular area beginning between setigers 9-10; brown pigment sometimes extending laterally forming characteristic transverse brown bands.

Remarks.—*S. schmitti* differs from other species of *Scoloplos* by having the first three thoracic neuropodia differing markedly from the following, provided with stout spines of a special type.

Material examined.—*Albatross* station 2207, 39° 35' N., 71° 31' W., 1,061 fathoms, green mud, 1884; station 2234, 39° 09' N., 72° 03' W., 810 fathoms, green mud, 1884; station 2531, 40° 42' N., 66° 33' W., 852 fathoms, grey mud, 1885.

Distribution.—North Atlantic, deep water off east coast North America (off Massachusetts to off New York). 788 to 1,061 fathoms.

Naineris (Naineris) berkeleyorum, n. sp.

Fig. 4, a-f

Naineris quadricuspida? Berkeley and Berkeley, 1956b, p. 544, fig. 5; not Fabricius, 1780.

The type (U.S.N.M. no. 28297) is a complete specimen collected on Smith Island in the Strait of Juan de Fuca, Washington, August 1, 1940.

The specimens reported by Mr. and Mrs. Cyril Berkeley (1956) from False Bay, San Juan Island, as doubtfully *N. quadricuspida*, certainly belong to this species which is here named for them.

Description.—Length 180 mm, greatest width 3 mm, segments about 350. Body widest in thoracic region which tapers gradually anteriorly

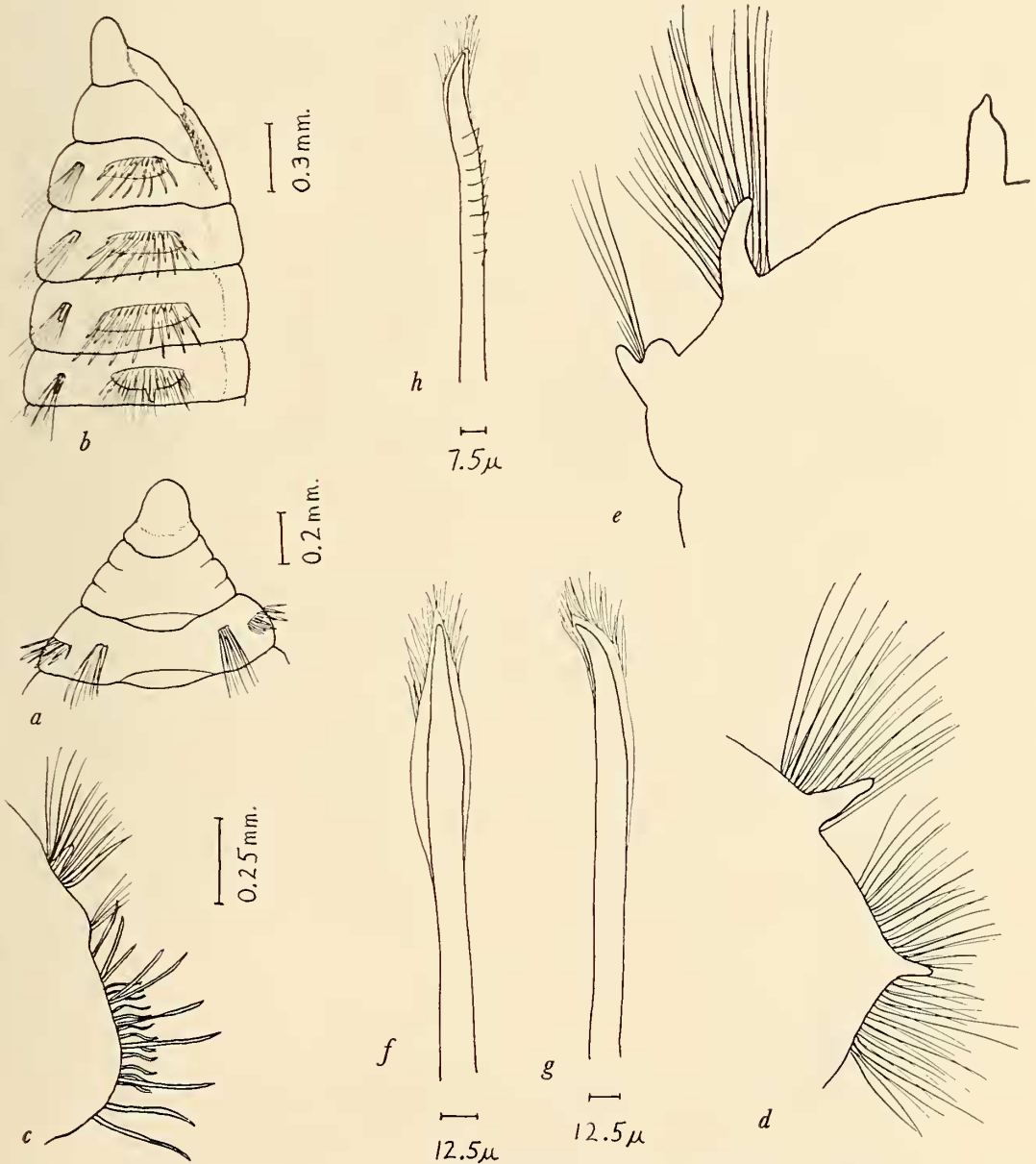


FIG. 3.—*Scoloplos schmitti*, n. sp.: a, Dorsal view anterior end; b, lateral view anterior end; c, left parapodium from setiger 3, anterior view; d, right parapodium from setiger 12, posterior view; e, left parapodium from setiger 15 (first abdominal), posterior view; f, g, neuropodial spines from setiger 2; h, short crotchet from setiger 2. (All parapodia drawn to same scale.)

and is flattened dorsoventrally; abdominal region long, convex ventrally, flattened dorsally. Prothorium (Fig. 4,a) truncate, loaf-shaped, wider than long. Achaetous buccal segment about same length as the following. Branchiae beginning on setiger 5, short anteriorly, becoming elongate, ligulate, densely ciliated up to near narrower distal tips; branchiae longer than parapodial lobes on abdominal region. Thoracic setigers 26 (26-27, Berkeley). Thoracic notopodia (Fig. 4,b,c) dorso-lateral, with digitiform postsetal lobe and radiating bundle of crenulate capillary setae. Thoracic neuropodia lateral, forming oval transverse cushion, with several transverse rows of crotchets (6 or 7 or so rows) and posterior row of longer

crenulate capillary setae; crotchets (Fig. 4,e,f) reddish bronzy, straight or curved, with transverse denticled rows, with tip entire or slightly incised (appears hooded at certain angles). No transitional setae (subuluncini). First 6 thoracic setigers with single conical postsetal papilla near middle of lobe (Fig. 4,b); rest of thoracic setigers with additional postsetal papilla near lower part of lobe (Fig. 4,c). Abdominal region with notopodia similar to those of thoracic region (Fig. 4,d), but notosetae more faintly crenulate; also some shorter forked setae (broken crenulate capillaries?). Neuropodium bilobed; inner lobe low, rounded; outer lobe short, digitiform; small bundle of faintly crenulate capillaries; single,

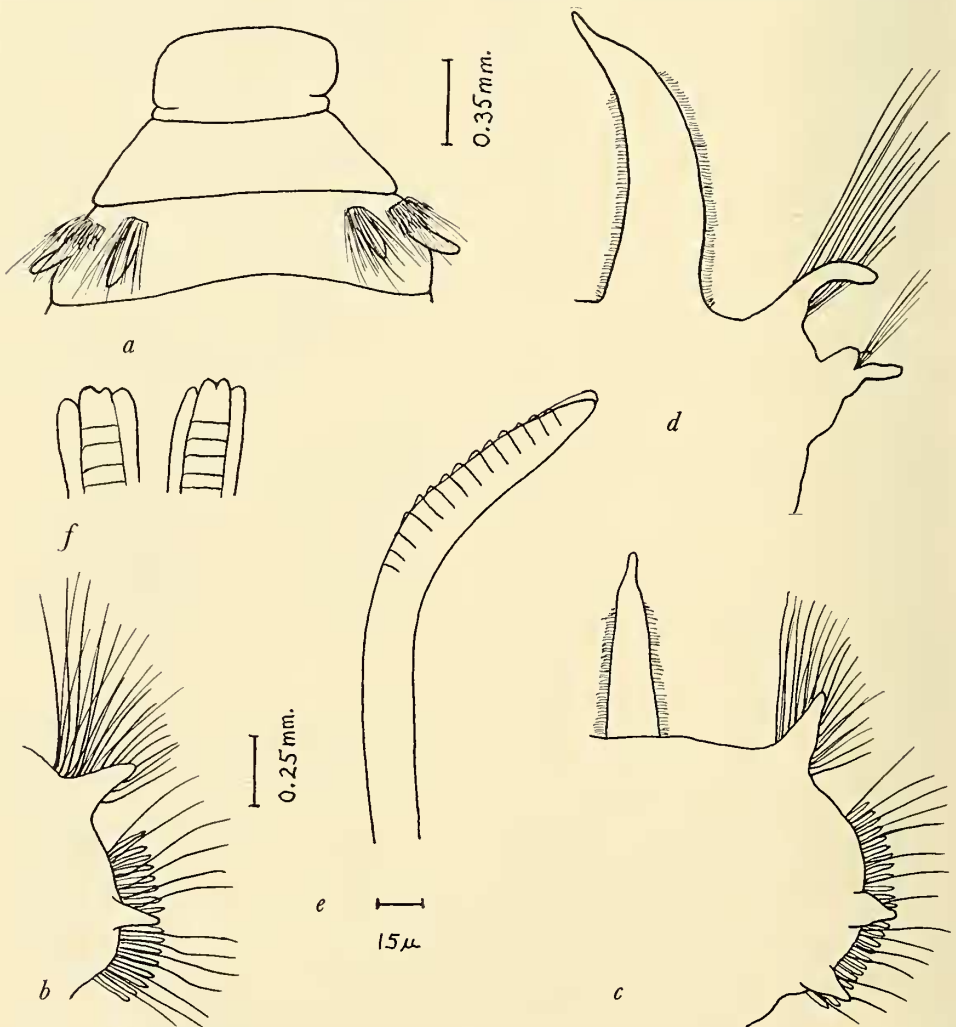


FIG. 4.—*Naineris berkeleyorum*, n. sp.: a, Dorsal view anterior end; b, right thoracic parapodium from setiger 4, posterior view; c, same, from setiger 18; d, right parapodium from setiger 40 (abdominal setiger 14), posterior view; e, thoracic neuropodial crotchet; f, tips of same, frontal view. (All parapodia drawn to same scale.)

slightly projecting amber-colored, curved aciculum with blunt or slightly notched tip. Subpodal papilla on first few abdominal setigers (5 or so) corresponding in position to lower postsetal papilla of thoracic setigers. Posterior end cylindrical, ending in 4-lobed anal segment; lobes dorsal, lateral and ventral, with 4 short slender anal cirri alternating with them. Proboscis partially extended in type, appearing as simple lobulated sac. Color (in alcohol) pale yellowish.

Remarks.—*Naineris berkeleyorum* resembles *N. quadricuspida*. It differs in the following:

	<i>Naineris quadricuspida</i>	<i>Naineris berkeleyorum</i>
Prostomium	Globular	Loaf-shaped
Number of thoracic setigers	About 13 (11-17)	26-27
Thoracic postsetal neuropodial lobe	Single median postsetal papilla on all thoracic setigers.	Single median postsetal papilla on first 6 setigers; 2 papillae on rest of thoracic setigers.
Subpodal papilla	None	Single one present on few anterior abdominal setigers (5 or so).

Distribution.—West coast North America (Strait of Juan de Fuca and San Juan Archipelago, Wash.). Low water.

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Definition is the end and epilogue of science. It is not the beginning of our knowing, but only of our teaching.—T. CAMPANELLA (1590).